The invention also includes sputtering under conditions, such as a sufficiently high target power and high magnetic field away from the target, that a non-linear wave-beam interaction occurs that pumps energy into plasma electrons, thereby increasing the plasma density.

Paragraph at page 10, lines 2-8:

Although the two pole faces 62, 68 are illustrated with specific magnetic polarities producing magnetic fields extending generally perpendicularly to the plane of illustration, it is of course appreciated that the opposite set of magnetic polarities will produce the same general magnetic effects as far as the invention is concerned. The illustrated assembly produces a generally semi-toroidal magnetic field having parallel arcs extending perpendicularly to a closed path with a minimal field-free region in the center. There results a closed tunnel of magnetic field lines forming struts of the tunnel.

Paragraph at page 13, line 25 to page 14, line 9:

A related shape is represented by a triangular magnetron 126, illustrated in plan view in FIG. 9. It has a triangular outer pole face 128 of one magnetic polarity surrounding a substantially solid inner pole face 130 of the other magnetic polarity with a gap 132 between them. The triangular shape of the inner pole face 130 with rounded corners allows hexagonal close packing of the button magnets 90, 92 of FIG. 6. The outer pole face 128 has three straight sections 134, which are preferably offset by 60° with respect to each other and are connected by rounded corners 136. Preferably, the rounded corners 136 have smaller lengths than the straight sections 134. One rounded corner 136 is located near the rotation center 78 and target center, preferably within 20%, more preferably within 10% of the target radius, and most preferably with the apex portion of the outer pole face 128 overlying the rotation center 78. The triangularly shaped inner pole piece 130 may include a central aperture, but it is preferred that the size of such an aperture be kept small to minimize the size of the central magnetic cusp.

Paragraph at page 16, lines 16-26:

The experimental work producing the process results presented below has demonstrated the advantage of a small magnetron area. If the triangular magnetron configuration of FIGS. 11 and 12 is adjusted to have significantly smaller apex angle θ with a reduced gap between the inner and outer poles, the total magnetic flux produced is limited by the permeability of the magnets. Therefore, as the apex angle and gap are decreased, the magnetic field across the gap does not extend so far away from the magnetron. As a result, the high-density plasma extends over an increasingly shallow height in front of the target. One approach to increase the effective magnetic flux is to use bar magnets instead of button magnets. The bar magnets have a larger fill factor in the pole area so that for a given total area and a maximum magnetic permeability (per unit area of magnet), a large magnet flux is produced.

Paragraph at page 21, lines 8-17:

A series of experiments were performed using a triangular magnetron 210 illustrated in the plan view of FIG. 18 and the side view of FIG. 19 including a generally triangular outer pole 212 surrounding an inner pole 214 of the opposite magnetic polarity. The magnetron 210 is placed behind a 1.2cm-thick planar target 14 of titanium sealed to the otherwise conventional sputter reactor of FIG. 1. However, the magnetron 210 is not rotated during the tests, and various probes 218 are inserted from the below with the probe tip located about 1cm below the target 14 at a position between the magnetron poles 212, 214 at about two-thirds of the target radius. Typical chamber operating conditions used during the tests are an argon gas pressure of 1.6 milliTorr and 2kW of DC target power producing a target voltage of 455VDC.

Paragraph at page 24, line 18 to page 25, line 6:

The conditions permitting the launching of the lower hybrid mode and its parametric conversion to another mode capable of coupling to the thermalized electrons depend greatly on the magnetic configuration and strength associated with the magnetrons. The magnetrons and